CLAIMS

1. A method for interfacing a macroscale device with a microscale device, comprising:

providing a macroscale device;

providing a microscale device;

providing a double-sided tape comprising a backing with a first and second side, each side coated at least partially with an adhesive to thereby generate a first and second adhesive surface, respectively;

adhering the first adhesive surface to a macroscale device surface to be interfaced with a microscale device surface,

contacting the microscale device surface to the second adhesive, thereby interfacing the macroscale device with the microscale device.

2. A method for interfacing a macroscale device with a microscale device, comprising:

providing a macroscale device;

providing a microscale device;

providing a double-sided tape comprising a backing with a first and second side, each side coated at least partially with an adhesive to thereby generate a first and second adhesive surface, respectively;

adhering the first adhesive surface to a microscale device surface to be interfaced with a macroscale device surface,

contacting the macroscale device surface to the second adhesive, thereby interfacing the macroscale device with the microscale device.

3. A method for interfacing a macroscale device with a microscale device, comprising:

providing a macroscale device;

providing a microscale device;

providing a transfer tape comprising a backing to which an adhesive surface is separably attached and wherein the bond between the

adhesive and backing is weaker than a bond to be formed between the adhesive and a macroscale device surface or microscale device surface;

adhering the adhesive surface to the macroscale device surface;

removing the backing; and

contacting the microscale device surface to the adhesive adhered to the macroscale surface; thereby interfacing the macroscale device with the microscale device.

4. A method for interfacing a macroscale device with a microscale device, comprising:

providing a macroscale device;

providing a microscale device;

providing a transfer tape comprising a backing to which an adhesive surface is separably attached and wherein the bond between the adhesive and backing is weaker than a bond to be formed between the adhesive and a macroscale device surface or microscale device surface;

adhering the adhesive surface to the microscale device surface;

removing the backing; and

contacting the macroscale device surface to the adhesive adhered to the microscale surface; thereby interfacing the macroscale device with the microscale device.

5. The method according to any one of claims 1-4, wherein the microscale device is a microfluidic device.

6. The method according to any one of claims 1-4, wherein the microscale device is an MEMS device.

7. The method according to claim 5, wherein the microfluidic device comprises at least one microchannel.

8. The method according to claim 5, wherein the microfluidic device comprises a plurality of microchannels.

9. The method according to claim 5, wherein the microchannels correspond in number to the number of wells in an industry-standard microtiter plate.

10. The method according to claim 9, wherein the microchannels connect to reservoirs in the microfluidic device and wherein the center-to-center distance of each reservoir corresponds to the center-to-center distance of the wells in the industry-standard microtiter plate.

11. The method according to claim 5, wherein the microfluidic device further comprises a sensor chamber for containing a sensor.

12. The method according to claim 11, wherein the sensor chamber is for containing one or more cells.

13. The method according to claim 5, wherein microfluidic device comprises at least one electrical element for performing planar patch clamp analysis.

14. The method according to any of claims 1-4, wherein the macroscale device is a medical device.

15. The method according to any of claims 1-4, wherein the macroscale device comprises a pump head connectable to a pressurized air supply.

16. The method according to any one of claims 1-4, wherein the macroscale surface is a surface of a device selected from the group consisting of a pump head, pump, degasser, flow meter, injector manifold, a pressure sensor; flow cell; concentration manifold or cartridges; a fitting or connector, a mixer, a compressor, an ultrasonic bed, an extractor, a focusing device, a dialysis chamber, an absorption chamber, a metabolite chamber, a toxicity chamber, a cell chamber, a detector, an RFID tag, a reagent vessel, a separation column, a focusing column, a size exclusion column, an ion-exchange columns; affinity columns; solid-phase

extraction beds; a filter; a sieve; a frit; a depth filter, a heater, a heat exchanger, a cooler; a magnetic field generator; electric field generator; electroporation device, patch clamp pipette, and one or more connections thereto.

17. The method according to claim 16, wherein the detector is selected from the group consisting of a UV/Visible absorbance flow cell, a fluorescence flow cell, a conductivity flow cell, an electrochemical detector, a plasma detector, surface plasmon resonance detector and a mass spectrometry detector.

18. The method according to claim 16, wherein the detector is a sensor selected from the group consisting of a flow meter, a pressure transducer, a temperature sensor, a chemical sensor, an acoustic sensor, a color sensor, an optical sensor, a bar code sensor, a photothermal sensor, a photoacoustic sensor, and an RFID tag.

19. The method according to claim 1 or 2, wherein at least one adhesive surface is covered by a release liner prior to adhering the device surface of the macroscale or microscale device.

20. The method according to claim 3 or 4, wherein the backing comprises a release coating for facilitating release of the adhesive from the backing.

21. The method according to claim 1 or 2 wherein the first adhesive and second adhesive comprise different types of adhesive.

22. The method according to any of claims 1-4, wherein the adhesive is patterned onto the backing.

23. The method according to claim 1 or 2, wherein at least one surface of the backing comprises portions that are coated with adhesive and portions that are not coated with adhesive.

24. The method according to any of claims 1-4, further comprising cutting the tape to a shape which is substantially the same size and/or shape as the surface of the macroscale device or microscale device to be interfaced.

25. The method according to claim 24, wherein cutting is performed using a die-cutting machine.

26. The method according to any of claims 1-4 where the tape can conduct heat.

27. The method according to any of claims 1-4 wherein the tape is electrically conducting.

28. A system comprising a macroscale device which is interfaced with a microscale device at an interface using double-sided tape.

29. A system comprising a macroscale device which is interfaced with a microscale device at an interface using transfer tape.

30. The system according to claim 28 or 29, wherein the microscale device is a microfluidic device.

31. The system according to claim 28 or 29, wherein the microscale device is a MEMS device.

32. The system according to claim 30, wherein the microfluidic device comprises at least one microchannel.

33. The system according to claim 30, wherein the microfluidic device comprises a plurality of microchannels.

34. The system according to claim 30, wherein the microchannels correspond in number to the number of wells in an industry-standard microtiter plate.

35. The system according to claim 34, wherein the microchannels connect to reservoirs in the microfluidic device and wherein the center-to-center

distance of each reservoir corresponds to the center-to-center distance of the wells in the industry-standard microtiter plate.

36. The system according to claim 30, wherein the microfluidic device further comprises one or more sensor chambers for containing one or more sensors.

37. The system according to claim 36, wherein the one or more sensor chambers is for containing one or more cells.

38. The system according to claim 30, wherein microfluidic device comprises at least one electrical element for performing planar patch clamp analysis.

39. The system according to claim 28 or 29, wherein the microfluidic device is a MEMS device.

40. The method according to claim 28 or 29, wherein the macroscale device comprises a pump head connectable to a pressurized air supply.

41. The method according to claim 28 or 29, wherein the macroscale surface interfaced with a microscale surface is a surface of a device selected from the group consisting of a pump head, pump, degasser, flow meter, injector manifold, a pressure sensor; flow cell; concentration manifold or cartridges; a fitting or connector, a mixer, a compressor, an ultrasonic bed, an extractor, a focusing device, a dialysis chamber, an absorption chamber, a metabolite chamber, a toxicity chamber, a cell chamber, a detector, an RFID tag, a reagent vessel, a separation column, a focusing column, a size exclusion column, an ion-exchange columns; affinity columns; solid-phase extraction beds; a filter; a sieve; a frit; a depth filter, a heater, a heat exchanger, a cooler; a magnetic field generator; electric field generator; electroporation device, patch clamp pipette, and one or more connections thereto.

42. The system according to claim 41, wherein the detector is selected from the group consisting of a UV/Visible absorbance flow cell, a fluorescence flow cell, a conductivity flow cell, an electrochemical detector, a plasma detector, surface plasmon resonance detector and a mass spectrometry detector,

43. The system according to claim 41, wherein the detector is a sensor selected from the group consisting of a flow meter, a pressure transducer, a temperature sensor, a chemical sensor, an acoustic sensor, a color sensor, an optical sensor, a bar code sensor, a photothermal sensor, a photoacoustic sensor, and an RFID tag.

44. The system according to claim 28 or 29, wherein at least one adhesive side of the tape surface is covered by a release liner prior to adhering the device surface of the macroscale or microscale device.

45. The system according to claim 28 wherein adhesives on each side of the double sided tape comprise different types of adhesive.

46. The system according to claim 28 or 29, wherein the adhesive on the tape is patterned onto a backing.

47. The system according to claim 28 or 29, wherein at least one surface of the tape comprises portions that are coated with adhesive and portions that are not coated with adhesive.